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Patent
Attorney's Docket No. 032264-002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of	)	
	)	
Thomas J. TAYLOR et al.	)	Group Art Unit: 1713
	)	
Application No.: 10/038,739	)	Examiner: Marie L. Reddick
	)	
Filed: January 2, 2002	)	Confirmation No. 3736
	)	
For: POLYCARBOXY/POLYOL FIBERGLASS BINDER	)	

COVER LETTER TO PTO

Mail Stop APPEAL BRIEF-PATENTS
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In response to the "Notification of Non-Compliance With 37 CFR 1.192 (c)" issued on June 22, 2004, attached hereto is a complete new brief, in triplicate, in compliance with 37 CFR 1.192(c). The brief now contains a statement of the cancelled claims, ie., claims 2-4, 6 and 9. This new brief is being filed within one month of the "Notification", as required.

The government fee was paid with the previous submission of the Appeal Brief, therefore no fee is enclosed. The Director is hereby authorized to charge any appropriate fees under 37 C.F.R. §§1.16, 1.17, and 1.21 that may be required by this paper, and to credit any overpayment, to Deposition Account No. 02-4800.

Favorable consideration of Appellants' Brief on Appeal is respectfully requested

Respectfully submitted,

Burns, Doane, Swecker & Mathis, l.l.p.

By: _____
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Date: July 1, 2004

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BRIEF FOR APPELLANT

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This appeal is from the decision of the Primary Examiner dated June 2, 2003 (Paper No. 6), finally rejecting claims 1, 5, 7, 8 and 10-20, which are reproduced as an Appendix to this brief.

The government fee was paid with the previous submission of the Appeal Brief, therefore no fee is enclosed. The Director is hereby authorized to charge any appropriate fees under 37 C.F.R. §§1.16, 1.17, and 1.21 that may be required by this paper, and to credit any overpayment, to Deposition Account No. 02-4800. Two extra copies of this Brief are being filed herewith and a copy of this page and the signature page are submitted in duplicate.

I. Real Party in Interest

The present application is assigned to Johns Manville International, Inc.

II. Related Appeals and Interferences

The undersigned legal representative, or assignee, does not know of any other appeal or interferences which will affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

III. Status of Claims

Claims 1, 5, 7, 8 and 10-20 are presently pending and on appeal. No additional amendment was made to the claims after the final rejection of June 2, 2003. The claims under appeal are set forth in the Appendix to this Brief. Original claims 2-4, 6 and 9 are cancelled.

IV. Status of Amendments

No amendment was filed after the final rejection of June 2, 2003.

V. Summary of the Invention

The present invention relates to a novel fiberglass binder which comprises a polycarboxy polymer and a polyol. Specifically, the binder relates to a polycarboxy polymer which has a molecular weight of around 5000 or less, and a polyol such as triethanolamine (page 7 of the specification, lines 17-18, and line 30). The use of these binders, with a specified hydroxyl/carboxy ratio in the range of from 0.6 to 0.8 and the low molecular

weight, results in few, if any, processing difficulties when preparing a fiberglass product. Sticking a balling of the fiberglass fibers during the preparation of the fiberglass mat become of minimal concern. The resulting product has also been shown to exhibit excellent recovery and rigidity properties, and surprisingly excellent storage modules within the specified hydroxyl/carboxyl range (page 10 of the specification, lines 11-32, and page 16, lines 3-7).

To achieve the surprising results of the present invention, it is important to use a low molecular binder in a specified hydroxyl/carboxy ratio. Specifically, it has been found that for the molecular weight polycarboxy polymers, where the molecular weight of the polycarboxy polymer is less than 5000, and preferably approaches 2000, the ratio should approach 0.7/1, e.g., is in the range of from 0.6 to 0.8 (page 10 of the specification, lines 20-32, and page 16, lines 3-7 and 22-24). This recognition of the importance of combining such low molecular weight with the specific hydroxyl/carboxyl range is nowhere in the prior art.

VI. The Issues

Issue 1: The first issue under appeal is whether claims 1, 5, 7, 8, 10, 11, 13, 14, 15, 17, 18 and 20 are indefinite under 35 U.S.C. §112 for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Issue 2: The second issue is whether claims 1, 5, 7, 8 and 10-20 are properly rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-24 of U.S. Patent No. 6,331,350.

Issue 3: The third issue is whether claims 1, 5, 7, 8 and 10-20 are anticipated under 35 U.S.C. §102, or in the alternative, are obvious under 35 U.S.C. §103 over Arkens et al (U.S. Patent No. 5,427,587), Arkens et al (U.S. Patent No. 5,661,213), Arkens et al U.S.

Patent No. 5,763,524), Arkens et al (U.S. Patent No. 6,136,916), Chen et al (U.S. Patent No. 6,274,661 B1) or EP 583 068 A1 (Arkens et al).

VII. Grouping of Claims

All claims are to be considered together and would fall or stand together.

VIII. Argument

Issue 1:

The Examiner rejected claims 1, 5, 7, 8 10, 11, 15, 17, 18 and 20 under 35 U.S.C. § 112, second paragraph, for being indefinite. The Examiner rejects the claims due to the recitation of "molecular weight". It is maintained by the Examiner that it is not readily ascertainable as to if "weight average" or "number average" is intended.

The molecular weight is a number average molecular weight. This is noted in Table 1 as Daltons, which method of determining the number average molecular weight is disclosed, for example, in U.S. Patent No. 5,932,665 (copy attached as Appendix B). See in particular, column 4, lines 44-57, and column 8, lines 11-16 of the '665 patent. One skilled in the art would understand that Daltons refers to a method of determining the number average molecular weight in accordance with the industry, e.g., as described in U.S. Patent No. 5,932,665. It is submitted, therefore, that the skilled artisan would understand the intended scope of the claims as written once read in the light of the specification, and viewed in light of the knowledge of the industry.

Issue 2:

Claims 1, 7, 8, and 10-20 stand rejected under the judicially created doctrine of

obviousness-type double patenting as being unpatentable over claims 1-24 of U.S. Patent No. 6,331,350 (copy attached in Appendix C).

The claims of the '350 patent specifically recite certain pH ranges. All claims of the '350 patent are specifically delimited by a pH limitation. None of the claims of the subject application contain a pH limitation. The claims of the present application, however, require a specific hydroxyl/carboxy ratio. Therefore, one could easily be covered by the claims of one patent, but not the other. Claim 1 of the '350 patent does not suggest claim 1 of the present application. Indeed, the pH limitation in claim 1 of the '350 patent is not an element in the claims of the subject application. One of ordinary skill in the art would not find it obvious to practice the process of the '350 patent at any suitable pH.

Therefore, it is submitted that the double patenting rejection is improper, and ought to be withdrawn. The issuance of the present application as a patent with its pending claims, would not result in an improper extension of the "right to exclude" since the subject matter claimed in the '350 patent and the subject matter claimed in the subject application are patentably distinct, and cover different subject matter.

Issue 3:

The Examiner rejects the claims under appeal, i.e., claims 1, 5, 7, 8, and 10-20, under 35 U.S.C. § 102(b) or (e), or under 35 U.S.C. § 103(a), over Arkens et al. (U.S. Patent No. 5,427,587); Arkens et al. (U.S. Patent No. 5,661,213); Arkens et al. (U.S. Patent No. 5,763,524); Arkens et al. (U.S. 6,136,916); Chen et al. (U.S. 6,274,661) or EP 583086. The presently claimed invention, however, is not specifically suggested or suggested in the cited prior art. Nor are the advantages of the claimed invention recognized, and thus, the requisite motivation to practice the claimed invention simply does not exist in the prior art.

The present invention relates to a novel fiberglass binder which comprises a polycarboxy polymer and a polyol. Specifically, the binder relates to a polycarboxy polymer which has a molecular weight of around 5,000 or less, and a polyol such as triethanolamine. The use of these binders, with a specified hydroxyl/carboxy ratio and low molecular weight, results in few, if any, processing difficulties when preparing a fiberglass product. Sticking and balling of the fiberglass fibers during the preparation of the fiberglass mat become of minimal concern. The resulting product has also been shown to exhibit excellent recovery and rigidity properties, as well as storage modules.

The importance of using a low molecular binder and the specified hydroxyl/carboxy ratio is discussed on page 10 on the specification, beginning with line 26. Specifically, it has been found that for the low molecular weight polycarboxy polymers, where the molecular weight of the polycarboxy polymer is less than 5,000, and preferably approaches 2,000, the ratio should approach 0.7/1 for the most advantageous results. This finding is totally unexpected in light of the prior art.

The comparative data in the specification demonstrates the importance of this molecular weight and hydroxyl/carboxy ratio relationship. For example, on page 16 of the specification, it is noted that the lowest molecular weight resin (resin D), which had a molecular weight of 2,000, with a stoichiometry of 70% (ratio of 0.7/1) gave the best acrylic bonded product performance (recovery and group).

Also attached hereto (as Appendix D) is a series of graphs which clearly demonstrate that surprising performance for acrylic resin binders is observed when the hydroxyl/carboxy ratio is in the range of from 0.6 to 0.8, and most particularly about 0.7. The graphs were prepared with an acrylic resin of a molecular weight less than 5,000. This combination of

specifically disclose a binder comprised of a polycarboxy polymer having a molecular weight of 5,000 or less which must be used in combination with a polyol in amounts such that the ratio of equivalents of hydroxyl groups to equivalents of carboxy groups approaches 0.7/1, i.e., in a range of from 0.6/1 to 0.8/1. The advantages of the combination of the low molecular weight together with the narrow range of hydroxyl/carboxy ratio is nowhere disclosed in the prior art. Thus, the requisite motivation to practice Appellants' claimed invention simply does not exist in the prior art, and therefore the prior art cannot render the claimed invention obvious.

IX. Conclusion

In light of the foregoing, appellants respectfully request reversal of the Examiner's §112 rejection, obviousness-type double patenting rejection, and art rejections under 35 U.S.C. §§102 and 103.

Respectfully submitted,

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low molecular weight and specific hydroxyl/carboxy ratio, and its importance to maximum performance, is nowhere disclosed in the prior art.

Furthermore, attached hereto (as Appendix E) is another graph showing the importance of a hydroxyl/carboxyl ratio in the range of from 0.6 to 0.8, one approaching 0.7, for purposes of storage modules. At a molecular weight of 3200 number average molecular weight, the percent triethanolamine employed must be in the range of from 60 to 80% to achieve the best ratio of storage modules to loss modules. The graph was prepared by Diana Fisler of Johns Manville.

The prior art does disclose fiberglass binders which include an acrylic acid polymer and a polyol. Broad ranges for the ratios of equivalents of hydroxyl groups to equivalents of carboxy groups are disclosed in the various references. However, nowhere is there a specific example, or any suggestion that one should employ a molecular weight of less than 5,000 in combination with a hydroxyl/carboxy group equivalents ratio in a range of from 0.6 to 0.8/1. The surprising advantages realized by the presently claimed invention and demonstrated in the attached graphs is nowhere disclosed in the prior art.

Accordingly, there is no anticipation as the specific combination of the low molecular weight polymers and the specific hydroxyl/carboxyl group ratio is nowhere disclosed in the prior art. The claimed subject matter also is not rendered obvious because the surprising results achieved by the combination, as claimed and demonstrated in the attached graphs, are nowhere suggested in the prior art.

As such, it is respectfully submitted that the Arkens et al. '587; Arkens et al. '213; Arkens et al. '524; Arkens et al. '916; Chen et al. '661 and EP 583086 patent references cannot anticipate or render obvious Appellants' claimed invention. None of the references

APPENDIX A

The Appealed Claims

1. A fiberglass binder, comprising an aqueous solution of

a) a polycarboxy polymer having a molecular weight of 5,000 or less, and

b) a polyol

with the amount of polycarboxy polymer and polyol in the binder being such that the ratio of equivalents of hydroxyl groups to equivalents of carboxy groups is in the range of from 0.6/1 to 0.8/1.

Claims 2-4 (Cancelled)

5. The fiberglass binder of claim 1, wherein the molecular weight of the fiberglass binder is about 3000 or less.

Claim 6 (Cancelled)

7. The fiberglass binder of claim 2, wherein the polyol is triethanolamine.

[The dependency of this claim and its connection to "claim 1" as suggested in the Examiner's June 2, 2003 Office Action, end of paragraph 7, will be effected should the subject rejection be reversed.]

8. The fiberglass binder of claim 1, wherein the polycarboxy polymer comprises a homopolymer or copolymer of polyacrylic acid.

Claim 9 (Cancelled)

10. The fiberglass binder of claim 1, wherein the ratio is in the range of from about 0.6/1 to about 0.75/1.

11. The fiberglass binder of claim 1, wherein the ratio of equivalents of hydroxyl group to equivalents of carboxy group is in the range of from about 0.65/1 to about 0.75/1.

12. A fiberglass binder, comprising an aqueous solution of

a polycarboxy polymer which comprises a homopolymer or copolymer of polyacrylic acid, and with the molecular weight of the polyacrylic acid being about 5000 or less,

triethanolamine, and

a catalyst comprised of sodium hypophosphite, sodium phosphite, or mixtures thereof,

with the amount of the polyacrylic acid and triethanolamine being such that the ratio of hydroxyl group to carboxyl group equivalents is in the range of from about 0.65/1 to 0.75/1.

13. The fiberglass binder of claim 12, wherein the molecular weight of the polycarboxy polymer is about 3000 or less.

14. The fiberglass binder of claim 12, wherein the molecular weight of the

polycarboxy polymer is about 2000.

15. A fiberglass product comprising a mat of glass fibers containing the binder of claim 1.

16. A fiberglass product comprising a mat of glass fibers containing the binder of claim 12.

17. The fiberglass product of claim 15, wherein the product is building insulation.

18. The fiberglass product of claim 15, wherein the building insulation is insulation for the roof.

19. The fiberglass product of claim 16, wherein the product is building insulation.

20. A process for making a fiberglass fiber mat using a binder, with the binder comprising the fiberglass binder of claim 1.

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